1: Glacken E-5 (1951-1952) 1953 AC7 Okinawa AC7

131 631 133 36[[161] pattern is similar to that of the central part. Villages are scattered throughout the area with population distribution comparable with the central area. Before the war, the densities here were over one thousand per square mile,[4] actually considerably more if the uninhabitable lands are subtracted.

How long this settlement pattern and these regional differences have existed is difficult to say. In studying contemporary environments, like Okinawa, which bear the imprint of long human settlement, it is useful to try to reconstruct the nature of the landscape before the interference of man. At one time, the whole island, with the exception of stony, rocky, and shallow soils and beach and marsh land was covered with forest. There are now no virgin stands. "It is evident that the present forest has been cut over many times. There seems to be no part of the island in which the forest cover has not been disturbed in some way by man."[5] In this light, the regional differences between the forested north and the deforested south are the work of man.

361 [073] [174] [161] The oldest settlements are thought to have been in the Naha and Shuri areas. Kudaka Island, off the southeast coast, according to one legend, was the site of the supernatural creation of the Okinawan people. The town of Unten, the Port Melville of Captain Hall and Commodore Perry, was, in one version, the scene of the landing of the Japanese warrior, Tametomo, but this was in the twelfth century. Northern areas were inhabited prior to the unification of the island in the twelfth century because they had their own regional chieftans before this. But the population of the north, at least up to the war, has been sparse and scattered. If the forests are any indication, it has been the central and southern regions which have been the scenes of longest settlement. Probably the settlement pattern had not changed much until the Japanese interventions of the nineteenth century and the great changes coming with the recent war, and with the extensive modifications which the Americans have made in the landscape of the central region.

[199] [198]

3

General Climatic Conditions

● 132 In the Köppen system, Okinawa has a humid subtropical climate. It is a rainy climate with no marked dry season; it has a mild winter and the temperature of the warmest month is over 71.6°F. The average annual temperatures in Naha range from 61° for January and February to 82°F for July and August, and the range from the mean minimum of 55° in February to the

[TEXT CONTINUES TOP of P. 14--Analyst]

4 See the population distribution maps in CA Handbook, Ryukyu (Loo-choo Islands, 48-49.

5 Okinawan Forests. (Prepared by the USGS, Military Geology Section under the direction of Office of the Engineer, GHQ, Far East Command), 1948, 2.

mean maximum of 89°F in August is only 34°.

Rainfall in Okinawa, though variable, is heavy. On the average there are at least 16 rainy days each month in Naha, but there are pronounced seasonal differences in the amount of precipitation. The rainiest season is from May through August, with a slight drop during July. The months of lowest rainfall are from December through March, with a slight increase in January.

These averages conceal significant fluctuations in the amount and distribution of rainfall, which are brought out to some extent (though these too are averages) by the statistics on maximum and minimum fall per month. The figures for maximum fall in 24 hours show that heavy rains can occur at any time of the year. (See Table 2).

This pronounced annual rainfall and the green vegetation which it produces were no doubt the reason that earlier voyagers were convinced of the luxuriance and fertility of Okinawa, just as similar mistakes were made with the fertility of the tropical rainforest soils.

From the standpoint of agriculture, these reservations must be made about the rainfall. (1) There is, as explained above, a marked seasonal variation for the island as a whole. (2) Though the island is small, there are significant variations from place to place. The regime for Naha may be similar to Nago in the north, for example, but the distribution and the quantity may vary. (3) There are significant monthly variations in the same locality from year to year, a fact obscured by averaging monthly precipitation for a twenty or twenty-five year period. This is clearly brought out in the following table of rainfall of Kochinda, chosen because it was closer than Naha to Hanashiro and Minatogawa.

Table 1

Precipitation at Kochinda
(In Millimeters)

	1921	1925	1930	1935	Ave. 1921-35
Jan	201	143	331	118	137.5
Feb	246	84	103	161	145.2
Mar	287	227	250	259	183.2
April	95	160	61	339	155.9
May	323	98	382	223	212.1
June	230	120	156	314	282.4
July	27	153	355	159	148.0
Aug	416	141	97	91	267.4
Sept	137	273	240	292	211.8
Oct	43	178	578	179	140.3
Nov	71	74	96	72	125.1
Dec	152	72	91	121	114.0

Source: Meteorological Office, Naha, September 1951. Since the point illustrated is the probability of monthly variations by year, the whole 15 year series has not been reproduced.

132 There are further local variations. Thundershowers often occur over a limited area. This precipitation is described by Okinawans as katabui, by which they mean a scattered, here-and-there rainfall.

[131] These variations in rainfall throughout the year and from year to year are the source of complaints of drought, frequently heard in the summer growing and fall harvesting season from July to October. [21] Dr. Green of Commodore Perry's staff mentions that droughts were spoken of in an official Loochoo document.

[134] There is also hidden drought caused by the rapid runoff of water and the absorption of water by permeable soils and quick subterranean drainage. [133] Water for crop growth is thus immediately dependent upon rainfall which must be immediately used before it becomes inaccessible. There are no snowy mountains to store the water for gradual use.

Since it is in a zone of mixture of warm and cold air, Okinawa is cloudy a great deal of the year. The days with the highest percentage of sunshine occur from June to October. There is very little condensation near the surface and fog is uncommon.

Relative humidity is high throughout the year. On the average, it does not fall below 74% (in December), and the highest average is 85% in June. This condition produces a hot humid summer, often with overcast skies and it also brings about a felt or sensible temperature much colder in winter than the temperature would indicate. Okinawan winters may be cold, especially with the winds from the northeast and east northeast. Blankets and heavy clothing do not hold the bodily heat. The insulating value of clothing and blankets seems to be reduced.

Okinawa is also affected by monsoonal influences in southern Asia. In the summer, the basic factor is the heating of large masses of continental air, the creation of low pressure areas, and the transport of air from the ocean to the continent. Prevailing winds are from the east, south, or south south east, or east south east, but here the prevailing should be stressed. Actually in a given period winds may shift and flow from varying directions.

In the winter, it is the air over the ocean that is warmer and the dry air from the cold high pressure areas blows out over the island. Prevailing winds from October through January are from the northeast. Though the mean velocities are modest, strong winds are recorded for every month in the year, winds either from the continent, or typhoons originating in the oceans north of the equator.

[132] [133] Another modifying factor is the Japanese current (Kuroshio). This current is really part of the North Equatorial current thought to have its origin on the Pacific side of Central America. As the current crosses the Pacific, it gets added colder water from the California current, and is further mixed with tropical and north Pacific waters, and later with western North Pacific waters. The North Equatorial current divides east of the Philippines, its northern arm going along the east side of the

northern Philippines and Formosa. From Formosa, these warm waters continue northeast between the Ryukyus and the shallow parts of the China Sea. In August the current flows on both sides of the islands. The behavior of the Japanese current in this area is strikingly similar to that of the Florida current of the Gulf Stream.[6] 132 133

The Ryukyus are in one of the great typhoon areas of the world. The season is from May to October, times of low atmospheric pressure, when the average range is from 1007 to 1015 millibars compared with a November-April range of 1015 to 1021 millibars. The period usually described as the typhoon season actually represents minimum expectations, for, as the table shows, typhoons have occurred in every month of the year, with the lowest incidence in April. The range from a minimum of twelve to a maximum of forty-five shows the reasons for uncertainties and the uneasiness with which the weather is regarded in the islands. The period of most frequent typhoon incidence coincides with the growing season, and violent typhoons can be expected as a matter of course prior to the winter rice harvest. 132 [731]

In typhoons, heavy winds, and gales, damage from salt water spray, especially in cultivated strips along the coast, can be expected. Local topography has a determining influence on the direction and area of spray damage, but some farmers in the Nagamo area estimated that spray damage had extended inland in some cases for two miles. There is also the problem of the saline content of rainwater. 132 133 [311]

Okinawa has a marine climate modified from what one might expect of its latitude by the monsoon regime which affects southeast Asia. When we understand this, the nature of the rainfall and its distribution, the possibility of drought, and of typhoons and their destructiveness, we are are in a better position to appreciate the difficulties under which agriculture must be practiced. 132

6 Sverdrup, Johnson, and Fleming, The Oceans, 718-22 and the literature there cited. Wust has pointed out in detail the similarities between the two currents. One difference is that the salinity of the Kuroshio is less and its waters are subject to excessive cooling in winter by the cold winds from the continent. See also Nuttonson, as cited, 20.

TABLE 2, CLIMATIC DATA, NAHA CITY

Weather Element	Ann	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Ave. Temp. °F a/	72	61	61	64	70	74	79	82	82	80	75	69	64
Mean Maximum	78	67	67	70	76	80	85	89	88	87	81	75	70
Mean Minimum	66	56	55	59	64	68	75	77	77	75	69	64	58
Relative Humidity a/	79	75	75	77	81	83	85	81	82	81	78	76	74
Mean Precip. inches a/	82.8	5.3	5.4	6.1	6.1	8.9	10.3	7.1	10.3	7.1	6.6	5.9	4.3
Max. Fall, 24 hours b/	16.8	5.9	3.5	7.8	13.9	8.1	7.2	9.1	9.7	7.3	9.8	16.8	4.2
Max. Fall, month c/	28.01	6.4	12.1	13.4	20.3	18.6	28.0	15.3	22.6	15.7	24.9	20.9	9.9
Min. Fall, month c/	0.6	1.2	0.7	1.7	1.4	1.3	1.3	1.2	1.4	0.9	0.9	0.6	1.7
Rainy Days a/	202	19	17	18	16	17	16	16	19	17	16	16	17
Cloudiness, % a/	70	75	79	78	76	77	76	60	59	55	60	71	73
Cloudy Days	171	17	17	19	17	18	16	9	9	8	10	15	16
Clear Days	20	1.0	0.6	1.0	1.3	1.3	0.9	2.0	2.0	3.0	3.0	2.0	2.0
Sunshine, % in Daylight	43	30	30	32	37	38	50	64	58	58	49	38	34
Foggy Days	0.8	0.1	0.1	0.1	0.1	0.2	0.0	0.1	0.0	0.1	0.1	0.0	0.1
Atmospheric Pressure a/ in millibars	10141	020	1019	1017	1015	1011	1009	1008	1007	1009	1015	1017	1020
Prevailing Winds: d/													
Mean Direction	ENE	NE	NNE	NE	E	E	S	SSE	ESE	ENE	NE	NE	NE
Mean velocity	8	10	10	8	7	6	6	6	7	8	8	10	10
Strongest Wind Recorded													
Direction	ENE	NNE	N	N	N	NNW	W	ENE	ENE	ENE	NNE	NW	NNW
Velocity, mph a/	100	39	40	54	50	44	53	58	52	100	76	74	38
Thunderstorms, No. of Days	20.6	0.2	0.8	2.8	3.0	2.0	3.3	3.0	4.3	1.0	0.7	0.8	0.1
Gales, Ave. No. of Days	8.4	1.0	0.5	0.5	0.0	0.0	0.1	0.5	1.2	1.3	1.4	1.2	1.0
Gales, Max. No. of Days f/	28	4	2	1	0	0	1	4	4	2	5	3	2
Min. No. of Typhoons a/	12	0	0	0	0	2		1	3	2	1	0	0
Max. No. of Typhoons	45	3	3	3	1	5	3	5	6	5	5	3	3

a/ Data compiled over period of 30 unspecified years, b/ 39 unspecified years, c/ 40 unspecified years, d
d/ probably 30 unspecified years, e/ over 20 unspecified years, f, over 8 year period, g/ period not given.
Source: CA Handbook Ryukyu Islands, 5-11.

1: Glacken E-5 (1951-1952) 1953 AC7 Okinawa AC7

Some young farmers are now breaking away from the traditional lunar month and using the western calendar in describing their annual activities.[1]

The use of the lunar month is not confined to farmers. Fishermen, describing their work year, speak in terms of lunar months. For this reason, it is essential in talking to farmers or fishermen to establish at the outset what reckoning they are using. The names of the lunar month and the western month are identical. Following the Chinese, there are no distinctive names for the months. They are numbered from one to twelve. The months have to be distinguished by saying, for example, "sixth month, old calendar," or sixth month, Western calendar."

An interesting minor detail of agriculture and the timekeeping connected with it is the reliance of Okinawan farmers on Japanese almanacs. These are printed and may be purchased throughout the island. One of these printed almanacs is in almost every house, or is readily available from a neighbor. Often, if one asks what is planted or harvested in any particular month, the farmer reaches for his almanac and produces the desired information. If the inquirer is not careful, he will obtain not what a farmer does during the year but what the almanac says he does.

2

Methods and Tools

In the chapter on general geography, it was pointed out that, despite a high annual rainfall and precipitation every month of the year, there is a problem of water shortage and of drought. This is especially serious in the summer months in all three communities.

[Text Continues Top of P. 167--Analyst]

1 The 24 seasons, borrowed from the 24 Chinese solar terms, into which the lunar year is divided, are also retained on the modern calendar, largely for the use of farmers. For example, Shōkan (Little Cold) begins about Jan 6, Chūkei (Insects Awaken) on March 6, Bōshu (Grain in Ear) on June 5, Ritto (Beginning of winter) on Nov. 7. These 24 seasons, in my experience, are not used much. Farmers think more in terms of the four seasons instead of the 24 little seasons. In Okinawa, they must be revised mentally to suit the humid subtropical climate. "Light snow," and "Heavy snow" are inapplicable in Okinawa; they would simply be small seasons in which one would expect the greatest severity of winter. For a list of the small seasons with Chinese characters, see The five thousand character dictionary, 5th ed., with additions and revisions by George D. Wilder and Chien Hsien Tseng. Peking, 1940, xxxi.

132 March through June is the season of greatest rainfall and therefore
731 of greatest flood danger. September and October rain is often light, and it is during this period that there is the greatest likelihood that the sweet potatoes will dry up. During the rainy season, there is flood damage to the rice and dry crop fields, especially if they are in the narrow ravines, or along small stream beds.

132 In Hanashiro, dependence on rainfall is immediate and direct.
312 There is no way of storing water in the mountains by accumulations
241 of snow. Runoff from the hills into the small streams is rapid. Short periods without rain are serious. The planting of the sweet potato is very sensitive to this factor. If one asks a farmer when he plants sweet potatoes, he always qualifies his reply by beginning, "If there is enough rain..."

241 There is in these villages no complex irrigation (kangai). In
312 Hanashiro, the flow of water through rice fields and its division are controlled by simple means. Water comes from the nearby hills, either in rivulets or in slightly wider ditches. In the former case, the water is divided by allowing the owner on one side of the stream to get water one day, diverting it on the next to the other side. The larger streams may be forked.

[133] Streams soon lose their identity as they descend from the hills to the lowlands, where they become the water of the paddy. The streams of Okinawa are hidden in the rice fields.

241 In Matsuda, the flow of water down the hillsides is controlled
311 largely by bench cultivation. Rice paddies go far up the narrow valleys
312 and ravines. When these have been converted to rice fields, the water flows into the highest level. A small aperture on the opposite side allows it to fall into the next lower paddy until the water reaches the level of the valley or lowland, where it may be further dispersed throughout rice fields, or trickle off again as a stream. In this way, the flow of the water, not too fast, not too sluggish, provides continually fresh water with its nutrients from the hillsides for each field, and makes possible the irrigation of large areas.

It is for these reasons that terracing is practiced. Cultivation is easier. So is irrigation. Soil runoff is avoided. Terracing is the only way that a ravine or a small slope can be used for paddies, for which a flat and level piece of land is required. Otherwise, the water necessary for the plant runs off.

244 [132] months. The amount of sweet potatoes grown is not closely related to the season. It depends much more on rainfall.

[031] [131] The effects of typhoons on the plant are most noticeable after transplanting. Salt water spray shrivels the transplants up and they die without developing. These conditions are more noticeable near the seashore in areas like Nagamo that lack trees and tidewater shelters.

824 Like rice, all of the sweet potato plant is used. Plant residues are turned under to fertilize the soil. This turning under of the vines or their use in composts is a doubtful blessing if the plants are diseased. The good potatoes are reserved for human consumption. [231] The poor or the diseased ones are mashed up in a stone mortar with a long pole, used like a pestle, for pig and goat food. Besides using the tops as slips, women constantly cut them off for fresh greens for [262] the pigs. The sweet potato is the basic food because it is cheap, can be grown the year round in lowlands and uplands, and can be cultivated by all members of the family. As pig food, it is a means of [462] inexpensively raising animals which later have cash value. The feeding and care of pigs is usually one of the incidental chores of women.

244 184 The varieties most commonly found in these Okinawan villages are the Okinawan #100 (Okinawan no hyakugo) and varieties known locally as the bentō, a small round tuber, and the bokuto. The two chief differences between the northern and southern villages in cultivating the sweet potato are (1) the two and three pronged hoes are much more in evidence in the north. With practice, they can be used advantageously in quickly weeding a plot while not cutting the potato itself. (2) Matsuda appears to be less dependent on the [262] sweet potato as a human food. The farmer here has more rice for him- [231] self and a greater proportion of his sweet potato crop goes for animal food.

6

The Planting of Sugar Cane and Sugar Making

249 Sugar cane (kibi) is grown on dry crop land, its rows often alternating on the same plot with the sweet potato. Cane may be started with cuttings, or it may be a second growth (ratoon) from the stubs of the old plant after it has been cut down for crushing. Cuttings may be purchased or selected plants from another planting are used. The slips are cut to leave three buds. These cuttings may be planted in three ways: (1) all horizontally, (2) horizontally with the cutting which comes from the topmost part of the stalk planted slantwise, or (3) all cuttings may be planted slanting.

The soil must be thoroughly worked with the ever present hoe. Plowing and harrowing are rarely done. The earth must be thoroughly fertilized. In addition, small amounts of compost may be placed under the cutting, and less often liquid night soil might be used.

1: Glacken E-5 (1951-1952) 1953 AC7 Okinawa AC7

Part 1

Hinatogawa, the Fishing Community

1

Introduction

Fishing families are a closely knit group. They are usually interrelated. For the most part, the main houses of their extended families are in the fishing town of Itoman. Fathers, sons, wives, daughters, grandparents participate in some phase of fishing activity. 226 [596] 607

In an agricultural community, the first son remains in the home working the fields of his father. In fishing, through long custom, there is an avoidance of teamwork among close relatives. Members of the immediate family will not go out on the same fishing boat. A father will not take his son, an elder brother will not take a younger. Partners and working teams on boats are more distant relatives or friends. If a father and a son are on the same boat and it is lost, the present and the succeeding head both perish. To this incontrovertible possibility, there has been added the belief that if two persons of the same immediate family go to sea together on the same boat, there will be a disaster. And actual and near disasters are frequent enough to make both points of view understandable. The sons of fishermen, who are learning the ways of the fish and of the sea, go on the boats of others. Many younger fishermen regard the belief that it is inviting disaster to have two members of the same immediate family together on the same boat as a superstition (meishin), but to my knowledge, no fisherman ignores the custom. 226 593 [183]

In Hinatogawa, about one half of the fishermen have fields of their own, usually small and poor. Perhaps twenty men in the village may be classed as half farmers and half fishermen, but even in these cases it is the wives and the children who have the continuing responsibility for the fields. 226 241 [423]

Neither is it rare for a fisherman to be a stonecutter. Perhaps another twenty men are engaged in the summer in fishing, and in stonecutting in the winter, or on unfavorable fishing days. The three main occupations of the village, including Nagamo, are thus found in varying combinations. Fishing is the most exacting and offers few opportunities for amateurs. Stonecutting requires strength and endurance. For those who have land, agriculture offers possibilities of growing one's own food and of avoiding cash outlays. 226 324 463

In an average summer month, there may be about 20 good fishing days. But because of unusual or unexpected rains or typhoons opportunities may be fewer. In 1951, there were only about ten working days in each of the summer months. In winter fishing days average about a week in a 226 96 [132]

vations one finds temperate zone forests. Typical for the area are numerous grasses growing along the mountainside and on top of hills. Among them, the most permanent in appearance and use are miscanthus grass and a dwarf bamboo. Panadanns bushes line the beaches and areas close to them. Pine trees are common. Fukugi trees grow in the village but also in the hinterland. Here and there cycad palms lend the scenery a special tropical touch. Wild flowers grow almost all year.

The heavy underbrush is the habitat of several species of poisonous snakes for which the Ryukyu Islands are notorious. The most common, the *habu*, a pit viper, feeds on rats and other small animals and often enters the actual village area. Since rats outnumber humans in Okinawa by an approximate ratio of three to one, these snakes find ample food. Their search sometimes takes them into the rafters of thatch-roofed houses. This danger is present from March until October. People are bitten if they happen to step on the hidden reptiles or sometimes while they sleep. Children are taught by their elders to be careful, and during our study no children were bitten.

Insects are another source of irritation. Mosquitoes attack quite viciously during the summer; fleas, which live in the sand and in straw or reed mats, inflict bites at any time but are seldom carried in clothes. Flies do not seem to annoy the villagers although they are thick wherever food is left in the open and near the pig pens and outhouses.

The number of motor vehicles passing through Taira is small. A few heavy lumber trucks and an occasional U.S. Army vehicle drive through the main street. Four buses daily, two in the morning and two in the afternoon, connect Taira with other villages in Higashi township and the rest of the island. Because traffic is sparse, and it is difficult to catch a ride, persons intending to leave the community in the middle of the day often take the 50-minute walk to the other side of the island where buses pass every 30 minutes on the coastal highway. Villages frequently take trips to the nearby provincial market town of Nago or even to Naha, the capitol.

THE CLIMATE

In spite of Okinawa's subtropical geographic position, it has distinct seasonal differences demanding appropriate adjustments in living routine and clothing. Temperatures in the Taira region may reach a minimum of 38 degrees in January and February and a maximum of 96 degrees in July or August. The average daily mean temperature,

● 132 however, shows much less variation. From the low 50's in early winter it rises to the low 80's in midsummer. The relative humidities, having daily means of 70% in January and February and 82% in July and August, may often reach an uncomfortable 96% preceding or following one of the many rain squalls in the hot season.

From January through March, winds blowing from the northwest to north carry cold, damp air from the Asian continent across the East China Sea. Although many houses in Taira are somewhat protected by bushes separating them from the open valley behind, nevertheless, house doors are often kept shut during this coldest part of the year.

March and April offer a pleasant, balanced climate. Winds are east to southeast, rainfall is low, and temperatures reach the high 60's. The rainy season begins in late May and lasts until late June. During these [964] four weeks it sometimes rains steadily for one or two days, and adults are forced to give up working.

Children take shelter during the worst downpours, but they reappear outside even before the rains are over to play in puddles or little streams running down the streets. During this time floods and landslides occur.

Midsummer is often so hot and humid that villagers frequently comment on their discomfort. This is one of the busiest agricultural seasons, but exhaustion causes many people to take naps during noon [961] [513] hours. Work efficiency decreases, and fewer daily trips are made to the mountains. Children also stay at home in the afternoon. It is believed that the heat causes severe headaches. The hot season gradually gives way to a few weeks in late October, November, and early December which correspond in climate to an early fall in northeastern United States.

132 Typhoons are known to have hit Okinawa at almost any time of 731 the year. The most dangerous season for these violent storms, however, with wind velocities of over 50 miles per hour, is from late June [206] until October. An extensive warning system exists, and Taira, though remote and without radio, is notified immediately by telephone of storm warnings, sometimes days in advance. Taira people hardly need such warnings. They can sense the oncoming storm and often predict one correctly before the official forecasts confirm that a storm is approaching the island. Since 1955 was one of the rare years in which no major storm hit the island, no firsthand description can be given. The damage is always considerable, not only to crops and trees but also to houses and other property.

CHAPTER I: GEOGRAPHY

F. R. Pitts

[131] Location Okinawa is a longish island, lying about halfway between Formosa and the southern tip of Kyushu. Together with clusters of islands lying both to the east and west, it forms the political unit known as Okinawa Guntō.

[133] Along the axis of Okinawa, which trends from southwest to northeast, there is a fairly simple division into a plateau-and-mountain northern half, a central plateau area, and a low rolling southern knob. The Motobu peninsula juts westward from the northern, or Kunigami, half and forms a distinctive area. Between the Kunigami mountains and the peaks of Motobu lies the ricebowl of Okinawa---the Haneji lowland.

[311] [241] Arable Land In general it can be said that the farm population increases as one proceeds south. Map 2, showing the arable land under cultivation as a percentage of the total land area, illustrates this.[1]

Farms in the mountain and plateau north are found in incised V-shaped valleys. Water is plentiful, and rice paddies cover the valley floor. Villages hug the edges of the flat land, and incredibly small sweet-potato terraces rise [137] up the valley's edge. Atop the plateau one finds only silence, and a dense growth of trees and bamboo. Many of the people in the valleys are part-time [132] foresters. The Motobu mountains guard from the frequent typhoons little settlements famed for growing the indigo plant and pineapples. The peninsula's north shore is a fertile but ever-narrowing extension of the Haneji lowland.

In the central plateau area---Nakagami---sweet-potato fields compete with scrubby forest for space on the plateau. Where sufficient water is available, rice fields cover the tiny valley floors and the low-lying coastal [134] fringes. The triangular southern end of the island is known as Shimajiri in [132] popular terminology. Shimajiri is blessed with the greatest concentration of fertile arable land on Okinawa. But the blessing is somewhat reduced by greater exposure to typhoons and a chronic water shortage. Sweet potatoes and sugar cane rank first among crops here.

[311] [243] [242] Riceland Okinawans prefer to eat rice rather than sweet potatoes whenever possible. It is a paradox, however, that areas of greatest farm population grow the least rice. The thinly populated north has the greatest amount of riceland. Map 3 charts the distribution of riceland---or flooded fields---on Okinawa. Even in the southern 'son' of Yonagusuku and Kanegusuku flooded fields often contain the mat rush rather than rice. It is a good cash crop, and is sturdier than rice when typhoons roar through the islands.

[128] [1] The figures upon which the maps in this section and the population section are based are found in Appendix A. The figures for Japan and Kagoshima-ken are given for comparative purposes. Of all the prefectures in Japan, Kagoshima most nearly resembles Okinawa in climate and emphasis upon sweet potatoes as a staple food.

241 311 312 [137] ●[132] Yields Per Acre Because Okinawa is a sub-tropical country, crops can be grown the year around. Hence the low productivity of a land subject to natural disaster such as drought and typhoons is somewhat compensated for. In the limestone areas of Shimajiri ground water is scarce except after fairly heavy rains. Nanahan has nine small ponds, or kumui, where people wash clothes and sweet potatoes and in which grows the water convolvulus, or unchēbā. Farmers say that if a drought lasts three months, crops do not yield at all. All remember the great drought of 1895 (Meiji 28-nen) when no rain fell for seven or eight months. Even wells dug in river bottoms dried up. The 23 households of Nanahan at present have eight small wells and one large community well which was dug in 1948. Little ditches on the hillsides lead rainwater to the rice paddies, and are fixed so that the water can be directed into wells. If a paddy field is near the farmer's house, a drainage ditch is dug to it for the disposal of used household water which is considered to contribute to a field's fertility. Tables VII and VIII show the yield of crops in Okinawan and American terms.

241 433

Table VII

Crop	Yield per tan[1]	Bushels per acre[2]
Summer rice	1.10 koku	41.1 bushels brown rice
Winter rice	1.16 koku	43.3 bushels brown rice
Upland rice	.72 koku	26.9 bushels brown rice
Common barley	.51 koku	10.4 bushels
Wheat	.59 koku	12.1 bushels
Naked barley	.52 koku	10.6 bushels
Millet	.38 koku	7.85 bushels
Common European millet	.40 koku	8.17 bushels
Soybeans	.70 koku	14.3 bushels
Green peas	.55 koku	11.3 bushels
Broad beans	.71 koku	14.6 bushels
Kidney beans	.71 koku	14.6 bushels
Peanuts	.83 koku	17.2 bushels

Table VIII

Crop	Yield per tan	Tons per acre
Sweet potatoes	1,762 kin	47.6
Irish potatoes	2,176	58.8
Cabbage	3,540	96.1
Other leafy vegetables	1,669	45.1
Giant radish	2,677	72.2
Carrots	2,439	65.85
Pumpkins	2,090	56.5

[1] Ryūkyū tōkei hōkoku, Vol. 3, No. 3, p. 1, 1953 (data for Okinawa Guntō).

[2] Converted according to standard indices, as given in SCAP, Natural Resources Section, Report No. 143, Tokyo, 1951.